

DESCRIPTION

ABSORBENT ARTICLE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to an absorbent article such as a disposable paper diaper, a sanitary napkin or the like. And more particularly, this invention relates to an absorbent article provided with an indicator means capable of identifying an excretion of body fluid such as urine or the like from an outer side.

2. Discussion of the Prior Art

A quality giving amenity to wearer and giving usability to user is required for an absorbent article such as a disposable paper diaper, a sanitary napkin, or the like. In order to obtain the amenity, a water vapor permeable film is generally employed in this field. And the level of water vapor permeability becomes higher and higher from year to year. Further, in order to improve the usability, an indicator means is in heavy usage. The indicator means is used to inform the user (for example, a mother) of the excretion of the wearer (for example, a nursing). And

a water content indicator is used as the indicator means. The development of the water content indicator is advanced. That is, the water content indicator is advanced so as to react quickly to a small amount of water content.

Previously, the following examples are generally known as the water content indicator provided in the absorbent article. An absorbent article described in Japanese Unexamined Patent Publication No. 9-299401 gives as one example. In this absorbent article, the water content indicator is formed by directly applying a display element to an inner surface side (that is, a skin contact surface side) of a base material sheet. Here, the display element consists of a water-based ink or paint. And the water-based ink or the paint discolours by the water content. The base material sheet consists of an unpigmented hydrophilic paper. As another example, there is an absorbent article described in Japanese Unexamined Patent Publication No. 2003-210522. In this absorbent article, the water content indicator is formed by directly applying a hydrophilic composition to an inner surface of a liquid impermeable back sheet. Here, the hydrophilic composition discolours by a change of pH. And pH changes by the water content.

However, such as the conventional absorbent article, which is provided with the water content indicator, have the following

problem. The problem is that the water content indicator reacts and discolours before use. That is, for example, the absorbent article is stored in a warehouse at a time of transporting. Or the absorbent article is displayed at the store or the like. At this time, the absorbent article is exposed to the outside air and the outside light. As the result, the water content indicator reacts and discolours before use. If the water content indicator is reacted and discolored before being used as mentioned above, it is hard to identify from outer side of the absorbent article whether or not the body fluid is actually excreted. Further, in the case that a small amount of body fluid is excreted, it is more harder to identify the excretion.

This invention has been made under the circumstances as described above. The purpose of this invention is to provide an absorbent article which removed the defect of the conventional absorbent article. That is, this invention is an absorbent article provided with a high sensitive water content indicator. And the high sensitive water content indicator does not decrease the function of the water content indicator, even if the absorbent article is exposed to the outside air and the outside light in the transportation or the storage, or the like. And the high sensitive water content indicator can immediately identify the

excretion of body fluid from the outer side of the absorbent article, even if a small amount of body fluid is excreted. And, an absorbent article of this invention makes feel good for a wearer. Further, an absorbent article of this invention makes useful for a user.

SUMMARY OF THE INVENTION

The above object of this invention is attained by providing an absorbent article comprising, in integral formation at least a liquid permeable top sheet, an absorbent, a water vapor permeable waterproof sheet, and a liquid impermeable back sheet in this order, characterized in that a water content indicator is provided on an inner surface of the water vapor permeable waterproof sheet, the water content indicator being constituted by a hydrophilic resin coating layer and an information mark provided on an inner surface of the hydrophilic resin coating layer.

The above object of this invention is more effectively attained by providing an absorbent article characterized in that the water vapor permeable waterproof sheet is constituted by a sheet material in which a water vapor permeability on the basis of JIS Z-0208 is $700 \text{ g/m}^2/24\text{h}$ or more.

The above object of this invention is more effectively attained by providing an absorbent article characterized in that

the hydrophilic resin coating layer constituting the water content indicator and the information mark are formed in approximately same shape.

Moreover, the above object of this invention is effectively attained by providing an absorbent article characterized in that a print surface by a general ink is provided at a position corresponding to the information mark between the water vapor permeable waterproof sheet and the hydrophilic resin coating layer.

As mentioned above, the absorbent article of this invention is provided with the water content indicator on the waterproof sheet. The water content indicator constitutes by the hydrophilic resin coating layer and the information mark. The hydrophilic resin coating layer has a moisture resistance. The information mark is formed on the hydrophilic resin coating layer. And the waterproof sheet has high water vapor permeability. Therefore, since the absorbent article of this invention has the high water vapor permeable waterproof sheet, the absorbent article of this invention does not generate a stuffy state causing for wear. As a result, the absorbent article of this invention is possible to makes feel good for a wearer. Further, since the water content indicator of this invention has the moisture resistance, the function of the water content indicator is not decreased by the humidity of the outside air. Furthermore, the absorbent article of this invention is possible to immediately inform the user of the excretion of body fluid. That is, since

the water content indicator of this invention has the high sensitivity, even if the amount of excretion of the body fluid is extremely small, the water content indicator rapidly reacts to body fluid. And the water content indicator changes by the body fluid. As a result, this invention can provide the absorbent article having a very high usability for the user.

In this case, the moisture resistance in this invention means that the water vapor permeability, which the waterproof sheet essentially has, drops by coating the resin on the waterproof sheet. Here, the water vapor permeability is measured on the basis of JIS Z-0208. In accordance with experiment, in the case that PVA resin of 10 μm is coated on the waterproof sheet having the water vapor permeability of 9000 $\text{g}/\text{m}^2/24\text{h}$, it appears that the water vapor permeability drops to 1500 $\text{g}/\text{m}^2/24\text{h}$. As described later, it is preferable that the water vapor permeable waterproof sheet is constituted by a sheet material having the water vapor permeability of 700 $\text{g}/\text{m}^2/24\text{h}$ or more. It is more preferable that the water vapor permeability of the sheet material is 7000 $\text{g}/\text{m}^2/24\text{h}$ or more. Here, the water vapor permeability is measured on the basis of JIS Z-0208. Further, the absorbent article of this invention, which having the structure mentioned above, produces a following pronounced effect. That is, even in the case that a small amount of urine of 10 cc is excreted, the water content indicator reacts and changes in an extremely short time within 10 seconds.

BRIEF DESCRIPTION OF DRAWINGS

Fig. 1 is an expansion plan view of a disposable paper diaper in accordance with a first embodiment of this invention.

Fig. 2 is a sectional view taken along the line I-I of Fig. 1.

Fig. 3 is a sectional view taken along the line II-II of Fig. 1.

Fig. 4 is an enlarged cross sectional view of the main portion of the first embodiment.

Fig. 5 is a plan view of the main portion of the first embodiment.

Fig. 6 is a plan view of the main portion of the second embodiment in accordance with this invention.

Fig. 7 is a plan view of the main portion of the third embodiment in accordance with this invention.

Fig. 8 is a sectional view taken along the line III-III of Fig. 7.

DETAILED DESCRIPTION

Hereinafter, it is described about contents of this invention. Here, a disposable paper diaper is cited as an example of an absorbent article. In this case, it is needless to say that this invention is not necessarily limited to this example. That is, this invention can make various compositions without

departing from the scope of claims.

Fig. 1 shows a first embodiment of this invention. That is, Fig. 1 is a plan view in the case of expanding a pants type disposable paper diaper (hereinafter, refer to as "present paper diaper") 100 and viewing it from a front face side. Fig. 2 shows a sectional view taken along the line I-I of Fig. 1. And Fig. 3 shows a sectional view taken along the line II-II of Fig. 1.

The present paper diaper 100 is formed by adhering and fixing an absorbent main body 10 on a front face side of a flexible outline sheet 1. The absorbent main body 10 provides a top sheet 11, an absorbing element 41, a waterproof sheet 15, and a back sheet 12. And the absorbent main body 10 is integrated by adhering the top sheet 11, the absorbing element 41, the waterproof sheet 15, and the back sheet 12 in this order (reference sign * in the drawing denotes an adhered portion). Here, the top sheet 11 is rectangular shape. And the top sheet 11 has liquid permeability. The absorbing element 41 is formed by covering an absorbent 13 with a crepe paper 14. Here, the absorbent 13 is sandglass-shape. The waterproof sheet 15 has water vapor permeability. The back sheet 12 has liquid impermeability. Further, the waterproof sheet 15 and the back sheet 12 are rectangular shape. Further, a hot melt adhesive agent or the like is used as adhesive agent. In this case, a liquid permeable second sheet 16 is interposed between the liquid permeable top sheet 11 and the absorbing element 41. Further, waist elastic stretchable members 20 and hipline elastic

stretchable members 21 are provided in the present paper diaper 100, for the purpose of increasing a fitting property around a hipline and preventing a body fluid from leaking out from a longitudinal direction in the present paper diaper 100.

Furthermore, a rising cuff 51 is formed in the present paper diaper 100, for the purpose of preventing body fluid from leaking out from a leg line opening portion 22. Here, the rising cuff 51 is constituted by a rising sheet 40 and elastic stretchable members 50 and 60 (this rising cuff 51 is constituted by a rising portion 52 and a flat surface contact portion 53). And the rising cuff 51 protrudes to a front face side of the present paper diaper 100 by the rising sheet 40 and the elastic stretchable members 50 and 60. The rising sheet 40 and the elastic stretchable members 50 and 60 are continuous in a width direction of the present paper diaper 100. First of all, the outline sheet 1 provided in the absorbent main body 10 is folded around a crotch portion 4 in a post-process of production. That is, a front body side 23 of the present paper diaper 100 and a back body side 24 of the present paper diaper 100 are formed by folding around a crotch portion 4. Further, both a side edge portion 30 of the front body side 23 in a longitudinal direction and a side edge portion 30 of the back body side 24 in a longitudinal direction are adhered each other. Here, an ultrasonic sealing, a thermal welding or the like are used as adhesive means. Accordingly, a waistline opening portion 25 and the leg line opening portion 22 are formed. As a result, the pants type disposable paper diaper 100 is

completed (a completion drawing is not illustrated).

In this case, the outline sheet 1 is formed by laminating two laminated unwoven fabric cloths, or the like. The laminated unwoven fabric cloths are transparent to semitransparent. And the outline sheet 1 has air permeability and water repellent. Further, since the top sheet 11 directly touches with a skin of a wearer, the top sheet 11 employs sheet having a pleasant feel. Specifically, the top sheet 11 preferably employs an unwoven fabric cloth, a porous plastic sheet, or the like. The absorbent 13 may employ any material as far as it can absorb and hold body fluid. In general, the following material is preferably employed as the material of the absorbent 13. That is, the main constituent of the absorbent 13 is a cotton-like pulp. The absorbent main body is obtained by mixing an absorbable polymer to the cotton-like pulp. The absorbent main body has certain degree of thickness and rigidity. And the absorbent main body is formed in a sandglass-shape. Thereby, the preferable absorbent 13 is obtained. The absorbing element 41 is obtained by covering an entire of an outer peripheral surface of the absorbent main body with a crepe paper 14. The crepe paper 14 is flexible. Further, the crepe paper 14 has a liquid permeability.

Both the water vapor permeable waterproof sheet 15 and the liquid impermeable back sheet 12 are provided so as to cover both side portions in the longitudinal direction of surface of the absorbing element 41. Specifically, the water vapor

permeable waterproof sheet 15 is provided on the liquid impermeable back sheet 12. The absorbing element 41 is provided on the water vapor permeable waterproof sheet 15. And a back face of the absorbing element 41, both side faces in the longitudinal direction of the absorbing element 41, and the both side portions in the longitudinal direction of surface of the absorbing element 41 are covered with both the back sheet 12 and the waterproof sheet 15.

The back sheet 12 employs a sheet material having at least a water shielding property. Specifically, the back sheet 12 employs transparent sheet material to semitransparent sheet material. And the sheet material of the back sheet 12 employs polyethylene, polypropylene, or the like. In addition, a laminated unwoven fabric cloth can be employed as the back sheet 12. The laminated unwoven cloth is obtained by laminating unwoven fabric cloths on the polyethylene sheet, or the like. Further, a string-like elastic rubber is preferably employed as material of the elastic stretchable members 20, 21, 50 and 60. The string-like elastic rubber is composed of a styrene series rubber, an olefin series rubber, a urethane series rubber, polyurethane, or polystyrene, or the like. The water vapor permeable waterproof sheet 15 used in the present paper diaper 100 is preferably employed a micro porous sheet, or the like, from the point of view of preventing leakage of body fluid and a stuffy state. The micro porous sheet is obtained by the following method. First of all, inorganic filler is melted and

kneaded in a material having water shielding property and water vapor permeability. The material having water shielding property and water vapor permeability can use, for example, an olefin resin such as a polyethylene, a polypropylene, or the like. And the material is formed into sheet. Thereafter, the sheet-like material is centrifuged toward uniaxial direction or biaxial direction. In this way, the micro porous sheet is obtained. Further, the water vapor permeable waterproof sheet 15 is possible to employ the following material. Specifically, the material is obtained by directly coating an acryl resin, or a polyurethane resin, or the like on a base material such as an unwoven fabric cloths, or the like.

In this case, in accordance with an experiment, the water vapor permeable waterproof sheet 15 can preferably employ the sheet material which has a water vapor permeability of $700 \text{ g/m}^2/24\text{h}$ or more, from the view point of amount of sweating of the wearer. Here, the water vapor permeability is measured on the basis of JIS Z-0208. This water vapor permeability of the sheet material is more preferably $7000 \text{ g/m}^2/24\text{h}$ or more, in order to keep a comfortable environment even though the wearer moves strenuously or urine is excreted.

In the present paper diaper 100, as shown in blackened portions of the cross section view in Figs. 2 and 3, a water content indicator 70 is provided on an inner surface of the water vapor permeable waterproof sheet 15. Specifically, the water content indicator 70 is provided in a range of being covered

by the absorbent 13. Further, the water content indicator 70 is provided at least near a center line of the absorbent 13. Here, the water content indicator 70 informs the user of excretion of body fluid. Fig.4 shows an enlarged view of a cross section of a main portion of the water content indicator 70. The main portion of the water content indicator 70 is a portion shown by a dotted line circle 61 in Figs. 2 and 3. As shown in Fig. 4, the water content indicator 70 is constituted by a hydrophilic resin coating layer 71 and an information mark 72. Specifically, the information mark 72 is provided on the hydrophilic resin coating layer 71.

The hydrophilic resin coating layer 71 is formed by coating a coating liquid of hydrophilic resin on the waterproof film 15. The coating liquid of hydrophilic resin is coating by a known coating system. The known coating system employs a gravure coater, or the like, for example. The hydrophilic resin coating layer 71 is formed so as to have a thickness of about 1 to 20 μ . The hydrophilic resin employs, for example, CMC, PVA, PEO, poly acrylic acid sodium, or the like. It is more desirable that ultraviolet absorbents, ultraviolet scattering agent, light stabilizer, or antioxidant are added to the hydrophilic resin mentioned above. Thereby, the present paper diaper can be increased a weather resistance. Here, the ultraviolet absorbents can employ salicylic acid series, benzophenone series, benzotriazole series, cyanoacrylate series, or the like. The ultraviolet scattering agent can employ zinc oxide, titanium

oxide, or the like. The light stabilizer can employ hindered amine series, or the like. The antioxidant can employ ascorbic acid, or the like. In the case that the thickness of the hydrophilic resin coating layer 71 is too thick, the thick portion becomes hard. As a result, the hard portion becomes feel rough. Therefore, it is not preferable that the thickness of the hydrophilic resin coating layer 71 is too thick.

The information mark 72 is formed by coating a known coating liquid for water content indicator on the hydrophilic resin coating layer 71. The information mark 72 is formed so as to have a thickness between 1 and 20 μ . Further, the information mark 72 is coated by a known coating machine in the same manner as mentioned above. The known coating liquid for water content indicator can employ, for example, erasing ink, water-soluble ink, hot melt adhesive agent composition, or the like. The erasing ink becomes peculiar color from achromatic color by molecular contact an electron donating coloration chemical compound with an electron acceptability developed color chemical compound. Further, the erasing ink erases color only by an attachment of the water. Here, the electron donating coloration chemical compound can select at least any one of crystal violet lactone, malachite green lactone, or the like. The electron acceptability developed color chemical compound is organic acid or organic acid salt. The organic acid or the organic acid salt can employ citric acid, itaconic acid, salicylic acid, zinc salicylate, or the like. The water-soluble ink is formed by

using eating dye. The eating dye can employ blue No. 1, or the like. The hot melt adhesive agent composition comprises pH control component and indicator medicine. The indicator medicine can employ promo-phenol blue, methyl red, or the like. Further, the indicator medicine is discolored by reaction to a change of pH. In this case, if the thickness of the information mark 72 is too small, it is hard to see the information mark 72 from the outer side. On the contrary, if the thickness of the information mark 72 is too large, the amount of the coating liquid is increased. As a result, a manufacturing cost of the present paper diaper 100 is increased. Accordingly, it is preferable to set the thickness of the information mark 72 in the range of from 1 to 20 μ .

Fig. 5 is a plan view showing a flat surface shape of the water content indicator 70. The water content indicator 70 is constituted by the hydrophilic resin coating layer 71 and the information mark 72.

As shown in Fig. 5, the flat surface shape of the water content indicator 70 presents the following state. That is, the hydrophilic resin coating layers 71 have a heart-shape. And the hydrophilic resin coating layers 71 are provided at regular intervals on the central portion in the longitudinal direction of the water vapor permeable waterproof sheet 15. The information mark 72 has a heart-shape. The heart-shape of the information mark is smaller than the heart-shape of the hydrophilic resin coating layers 71. And the water content

indicator 70 is a heart-shape. That is, the state is that the water content indicator 70 is formed by providing the information mark 72 on the hydrophilic resin coating layer 71. In the case of viewing the water content indicator 70 structured as mentioned above from the outer side of the present paper diaper 100 via the back sheet 12 and the outline sheet 1, it appears that the design is applied to the present paper diaper 100. Therefore, the present paper diaper 100 has advantage of giving sense of beauty to viewer. Here, the back sheet 12 and the outline sheet 1 are transparent to semitransparent.

Further, in the case that the water content indicator is formed by roughly matching the outer shape of the hydrophilic resin coating layer 71 with the outer shape of the information mark 72, it is possible to minimize used amount of the hydrophilic resin coating liquid. Here, the hydrophilic resin coating liquid form the hydrophilic resin coating layer 71. Therefore, it is possible to reduce the manufacturing cost of the present paper diaper 100.

In this case, the information mark 72 is not limited to the heart-shaped pattern as mentioned above. Specifically, the information mark 72 can arbitrarily employ the conventionally known various patterns according to the purpose. For example, letter, mark, design, a combination thereof, or the like can be employed as the conventionally known various patterns.

In accordance with the present paper diaper 100 provided with the water content indicator 70 as mentioned above, the user

can immediately cognize the change of the information mark 72. Specifically, in the case that the body fluid (for example, the urine) is excreted to the surface of the liquid permeable top sheet 11, the urine is diffused and moved so as to be absorbed within the absorbing element 41. At this time, the water content indicator 70 is provided next to the absorbing element 41. Accordingly, in the case that a trace amount of the urine acts on the water content indicator 70, the information mark 72 reacts to the water content included in this urine. As a result, the information mark 72 discolours or decolours. Therefore, the user can immediately cognize the change of the information mark 72 from the outer side of the present paper diaper 100 via the transparent to semitransparent back sheet 12 and the transparent to semitransparent outline sheet 1.

In this case, in accordance with an experiment, it is confirmed that the water content indicator 70, which provided in the present paper diaper 100 having the following the absorbent 13, reacts and discolours for a short time within ten seconds with respect to an extremely small amount of urine (for example, 10 cc urine). In this case, the absorbent 13 is formed by uniformly mixing the pulp and the SAP. At this time, the pulp and the SAP are respectively mixed in the absorbent article in such a way that the amount of mixing of the pulp is 200 g/m^2 , and the amount of mixing of the SAP is 150 g/m^2 .

Further, as mentioned above, the hydrophilic resin coating layer 71 constituting the water content indicator 70 has an

excellent property in terms of the moisture resistance.

Therefore, in the case that the present paper diaper 100 is exposed to the outside air over the long term, the water content indicator 70 is neither reacted nor discolored. As a result, the function of the water content indicator 70 can be maintained long time.

Furthermore, the water vapor permeable waterproof sheet 15 employs the sheet material having the excellent water vapor permeability. Therefore, in the case that the wearer wears the present paper diaper 100 for a long time, the stuffy state is not generated in the crotch portion. Further, since the present paper diaper 100 feels pleasant, it is possible to apply the comfortable feeling to the wearer. Here, the water vapor permeability of the water vapor permeable waterproof sheet 15 is $700 \text{ g/m}^2/24\text{h}$ or more. Most preferably, the water vapor permeability of the water vapor permeable waterproof sheet 15 is $7000 \text{ g/m}^2/24\text{h}$ or more. In this case, the water vapor permeability is measured on the basis of JIS Z-0208.

Hereinbefore, it describes about the present paper diaper 100 in accordance with the first embodiment of this invention. The present paper diaper 100 is composed of the second sheet 16 and the outline sheet 1. However, the present paper diaper 100 needs not necessarily the second sheet 16 and the outline sheet 1. That is, these sheet materials can be omitted in accordance with the configuration of the absorbent article, the purpose of the absorbent article, the application of the absorbent article, or the like.

Further, in the present paper diaper 100, the hydrophilic resin coating layer is provided on the water vapor permeable waterproof sheet. And the information mark is provided on the hydrophilic resin coating layer. At this time, the following method can be employed as the method to provide the hydrophilic resin coating layer or the information mark. That is, the gravure printing can be employed as mentioned above. In addition to this, it is possible to employ an offline printing method, an inline printing method, or the like. The offline printing method can employ, for example, a flexographic printing, or the like. The inline printing method can employ ink jet, hot melt, or the like.

Fig. 6 shows a plan view of a water content indicator 76. The water content indicator 76 is a main portion of a second embodiment in accordance with this invention. Specifically, the water content indicator 76 is a modified embodiment of the water content indicator 70 provided in the present paper diaper 100.

As shown in Fig. 6, the water content indicator 76 is structured by the hydrophilic resin coating layer 71 and the information marks 72. The hydrophilic resin coating layer 71 is provided on a roughly entire surface of the water vapor permeable waterproof sheet 15. Further, the information mark 72 is provided on the hydrophilic resin coating layer 71. The hydrophilic resin coating layer 71 is formed in a rectangular shape. The information marks 72 are formed in the heart-shape

as well as the information marks 72 shown in Fig. 5. Further, the information marks 72 have the thickness as well as the information marks 72 shown in Fig. 5. As shown in Fig. 6, in the case that the hydrophilic resin coating layer 71 is provided over a large area, the manufacturing cost increased. However, the present paper diaper 100 can obtain the following advantage in addition to the above-mentioned advantage. Specifically, in the case that the hydrophilic resin coating layer 71 is provided over a large area, it is possible to provide the information mark 72 in large numbers. Further, it is possible to provide the information marks 72 of various configurations.

In the same way, Fig. 7 shows a plan view of a water content indicator 77. The water content indicator 77 is a main portion of a third embodiment in accordance with this invention. Specifically, the water content indicator 77 is a modified embodiment of the above-mentioned water content indicator 76 provided in the present paper diaper 100. Further, Fig. 8 shows a sectional view taken along the line III-III of Fig. 7.

As shown in Figs. 7 and 8, the water content indicator 77 is structured by the hydrophilic resin coating layer 71 and the information marks 72. Further, the hydrophilic resin coating layer 71 is formed in the rectangular-shape. The information marks 72 are formed in the heart-shape. Furthermore, the hydrophilic resin coating layer 71 and the information marks 72 has the thickness as well as shown in Figs. 1 to 6. In these regards, the water content indicator 77 is similar to the water

content indicator 76. However, as shown in Fig.8, printed surfaces 73, 74, and 75 are provided in the water content indicator 77. The water content indicator 77 is different from the water content indicator 76 in this regard. The printed surfaces 73, 74 and 75 are provided between the water vapor permeable waterproof sheet 15 and the hydrophilic resin coating layer 71. Further, the printed surfaces 73, 74 and 75 are provided at positions corresponding to the arranged positions of the respective information marks 72. In other words, the printed surfaces 73, 74 and 75 are provided at positions beneath the respective information mark 72. Furthermore, the printed surfaces 73, 74 and 75 are formed by general ink. The general ink never discolours even if the general ink contacts with the water content. Further, the printed surfaces 73, 74 and 75 are formed by the printing method similar to the above-mentioned printing method. These printed surfaces 73, 74 and 75 are respectively formed by the ink of the same color. In addition, these printed surfaces 73, 74 and 75 may be respectively formed by the ink of the different color. In this case, it is not preferable to make the ink for forming the printed surfaces 73, 74 or 75 by mixing the different ink. Because the ink obtained by mixing the different ink decreases a capability of the ink.

Further, in this embodiment, the printed surfaces 73, 74 and 75 are formed with a shape of a star in a plane shape. In addition, the shape of the printed surfaces 73, 74 or 75 can be changed arbitrarily. In this regard, it is as well as the

above-mentioned hydrophilic resin coating layer 71 or the above-mentioned information marks 72.

In accordance with the above-mentioned water content indicator 77, it is possible to instantaneously and securely inform the user of excretion. Specifically, in the case that excreted urine comes in contact with the water content indicator 70, each information mark 72 discolors to decolors. On the other hand, the printed surfaces 73, 74 and 75 do not change. Accordingly, in the case of viewing from the outer side of the present paper diaper 100 providing the water content indicator 77, only the printed surfaces 73, 74 and 75 remain. As a result, the design of the printing appears to have changed before and after the excretion of the urine. Therefore, it is possible to instantaneously and securely inform the user of excretion.

With respect to industrial applicability, it goes without saying that this invention is not limited to the pants type disposable paper diaper. That is, this invention can be widely applied to the other absorbent articles in addition to a tape type disposable paper diaper. The sanitary napkin, the urine remaining pad, and the like, are pointed to as examples of the other absorbent articles.